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DYNAMIC T2 SIGNAL CHANGES ON MAGNETIC RESONANCE IMAGING AFTER RADIOFREQUENCY ABLATION INJURY TO THE ATRIAL MYOCARDIUM

Poster Contributions
Poster Hall B1
Saturday, March 14, 2015, 3:45 p.m.-4:30 p.m.

Session Title: Non Invasive Imaging: CMR and Myocardial Tissue Characterization
Abstract Category: 18. Non Invasive Imaging: MR
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Authors: *Allen Rassa, Eugene Kholmovski, Promporn Suksaranjit, Brent Wilson, Nazem Akoum, Nassir Marrouche, Christopher McGann, University of Utah, Salt Lake City, UT, USA*

Background: Radiofrequency ablation (RFA) is an effective therapy for atrial fibrillation (AF) and can result in cure. Post-ablation injury is well visualized on T2 weighted (T2w) cardiac magnetic resonance imaging (CMRI) sequences but does not correlate well with scar formation. However, the change in T2 signal over time has not been well described and may still prove to be clinically useful.

Methods and Results: Patients presenting for pulmonary vein isolation (PVI) for treatment of AF underwent serial T2w CMRI before and after the procedure. Immediate RFA lesions were characterized by T2w imaging during CMRI guided ablations in a porcine model. All ablation procedures were performed in an EP-MRI suite with imaging on a 3 Tesla scanner. Study of the left atrial (LA) injury response on CMRI scans showed increased T2w signal seconds after ablation, involved a majority of the LA wall within 24 hours, and resolved in less that a week (Figure).

Conclusion: RFA injury to the LA myocardium causes inflammatory changes on T2w MRI that begin immediately after energy delivery and spread rapidly to surrounding tissue. These MRI findings may be of clinical interest as tissue injury from the initial RFA lesions may influence the success of lesions delivered later in the procedure.